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ABSTRACT

The results from three studies using data provided by the SLOPE Test and oral interviews are reported. The studies include: (1) a comparison of rank orders obtained over a period of time; (2) a comparison of rank orders obtained in instrument-elicited and spontaneous speech; and (3) a comparison of results obtained using two methods of analysis, rank ordering and error analysis. The results of these studies suggest that morpheme rank ordering, using cross-sectional data and based upon instrument-elicited speech, can be a valid method of analysis. Certain limitations to this method are noted, however, for morpheme ordering appears to obscure important data. A recommendation is made for supplementing results with other types of analysis which examine the basic forms produced by language learners. (Author)

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THE VALUE OF MORPHEME ORDER STUDIES FOR SECOND LANGUAGE LEARNING

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Many of the second language acquisition studies in recent years have examined the relative 'order difficulty' or 'order of learning' of a small number of English morphemes. These studies have been used to examine differences among language learners, investigate factors affecting successful language learning, infer learner strategies and substantiate certain theories of language learning.

Brown (1973) provided the model for many of the later morpheme studies in his longitudinal study of the acquisition of 14 morphemes by children learning English as a first language. Dulay and Burt (1973, 1974) first used this method in second language studies, and their important work in morpheme acquisition has remained some of the most often discussed work in second language research. They developed an instrument, The Bilingual Syntax Measure, to elicit specific morphemes. BSM scores are based upon the number of absent, partially correct or correctly formed morphemes produced in obligatory contexts. The ordering of morphemes is then determined by ranking the morphemes according to descending scores. In their cross-sectional studies, Dulay and Burt found a strikingly similar order of acquisition of morphemes among second language learners. On the basis of these results they suggested a "creative construc-

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tion process among second language learners."

The BSM and methodology developed by Dulay and Burt have been used in many subsequent studies to examine morpheme acquisition among second language learners. Bailey, Madden and Krashen (1974) found similar morpheme orderings for adults and concluded that "children and adults use common strategies and process linguistic data in fundamentally similar ways." Larsen - Freeman (1975) used the BSM and four other measures to determine morpheme difficulty orders on different tasks. She found differences among tasks in ordering and concluded that morpheme orders might be more appropriately called "accuracy orders for a specific task."

A number of other instruments have been developed to elicit specific morphemes, such as The SLOPE Test (Fathman, in press). Studies using the SLOPE Test have shown similar morpheme orders to exist among children of different ages and language backgrounds (Fathman, 1975), among adults and children (Krashen, Sferlazza, Feldman and Fathman, 1976), among second and third language learners in monitored and non-monitored speech (Fuller, 1978).

Mace Matluck (1977) used results of the MAT-SEA-CAL Oral Proficiency Test to compare the order of acquisition of morphemes between first and second language learners. She found similar orderings among L_2 learners, but a low correspondence between L_1 and L_2 orders, suggesting that "determinants of L_1 order are not the primary factors that determine L_2 sequence."

Longitudinal studies of morpheme acquisition have analyzed speech samples over a period of time. Turner (1978) analyzed spontaneous and elicited speech of three adults over a six month

period and found a morpheme ordering that correlated among subjects, but that did not correlate with the order of instruction, suggesting that order difficulty is not significantly affected by instruction.

The acquisition of morphemes has also been examined in a number of case studies of children learning English as a second language. Rosansky (1976) examined the use of morphemes over a 10 month period of a Spanish speaking boy, Hakuta (1974) studied the development of English in a Japanese girl and Kessler and Idar (1977) examined the development of syntactic structures in a Vietnamese child. The results of such longitudinal studies suggest that there is more individual variability in morpheme acquisition than has been suggested by many of the group morpheme studies.

The number of morpheme studies continues to increase, despite growing criticisms of the method of analysis and value of information provided by such studies.

The question of the validity of certain morpheme studies has been raised by Rosansky (1976) in her criticism of cross-sectional studies based upon instrument-elicited data. In a study of six Spanish speakers, she found large variability among individuals even though instrument-elicited and spontaneous speech orders correlated significantly. She also found that cross-sectionally based and longitudinally derived orders for one individual did not correlate. Thus she suggested that caution should be exercised in evaluating rank order results, expecially those of cross-sectional studies.

Felix (1977) has also suggested that there are differences in ordering, depending on whether the speech sample examined is spontaneous or elicited speech, based upon his study of German children learning English.

Porter(1977)suggested that ordering may be an artifact of the instrument used in many studies. He tested eleven children learning English as a first language using the BSM and found no correlation between his rank order and those found in other first and second language research. On this basis, he questioned the validity of the BSM as a speech elicitation technique.

Other more general criticisms have been made concerning the limited nature of the information provided by morpheme studies. Wagner - Gough and Hatch (1976) have noted that many of the morpheme studies have isolated language form from meaning and function, and that if meaningful results are to be obtained, the relationship between language and communication should not be neglected.

Andersen (1977) has suggested that the current cross-sectional morpheme accuracy methods eliminate or obscure variability and do not reveal true systematicity in the data. He has suggested that alternative methods of analysis, especially implicational analysis (see Andersen, 1978) may provide a possibility for dealing with systematicity, variability, groups and individuals at the same time.

Krashen in a series of papers (1977, in press, forthcoming) has responded to many of the criticisms of morpheme order studies. In reviewing the literature, he has questioned certain methodological differences among studies and shown that the results of most studies suggest a quite consistent morpheme ordering among second language learners.

In this paper, some of the criticisms of morpheme order studies are further considered. The validity of cross-sectional morpheme order studies based upon instrument-elicited speech is examined, and an alternative method of analysis is used to demonstrate how alternative methods of analysis might provide more specific information on the learning process.

Table 1

SLOPE Subtests and Sample Structures

Subtests	Sample Structures Elicited
Article	The book
Present Participle	The boy is running
Possessive	The cat's ball
Present - 3rd reg.	The boy washes
Comparative	This tree is taller
Superlative	This tree is the tallest
Present - 3rd irreg.	The mother has the cat
Preposition	The cat is in the box
Past Participle - reg.	The boy has finished
Past Participle - irreg.	The mother has left
Subject Pronoun	He likes cake
Object Pronoun	The father gives the book to him
Possessive Pronoun	This is her pencil
Plural - irreg.	Two feet
Plural - reg.	Two books
Affirmative Declarative	The boy is reading the book
Negative	This boy can't see the dog
Imperative	Go to bed
Yes/No - Question	Are you hungry?
Wh - Question	Where are you going?

METHOD

Speech samples were collected from approximately 200 children between 6 - 16 years who were learning English as a second language in American public schools. The SLOPE Test was used to provide data for instrument-elicited speech ,and conversations between the tester and student used as the basis for 'spontaneous' speech analysis. The SLOPE Test is an oral production test which assesses a student's ability to produce specific grammatical structures (see Fathman 1975). It consists of 20 subtests, with three items per subtest, each representing certain syntactic structures or morpheme catagories. Most items consist of 2 pictures: A description is given of one picture, then the student is required to complete the description of a second picture by supplying correct words or phrases. A list of the subtests and sample structures which are elicited are given in Table 1.

Table 1

Three separate studies were done using the data provided by the SLOPE Test results in order to examine certain aspects of the value of the morpheme rank ordering method of analysis. These studies include: 1) A comparison of rank orders obtained over a period of time 2) A comparison of rank orders obtained in instrument-elicited and spontaneous speech 3) A comparison of results obtained using two methods of analysis; rank ordering and error analysis.

A Comparison of Morpheme Difficulty Orderings Over Time

One criticism of cross-sectional morpheme studies has been that the point at which one takes a sample may be a 'non-representative

slice' of the entire continuim of the learning process. (Rosansky, 1976). Thus in this analysis samples were taken at different times from the same individuals, and the morpheme orderings compared from these samples to determine if the point at which a sample is collected does affect the relative ordering of morhpemes.

The SLOPE Test was administered to approximately 60 children on two separate occasions. The time between test administrations was six months for one group, nine months for another and twelve months for a third group. For each testing the subtests were ordered according to mean score for each group. Then the rank orderings of the morpheme subtests were compared from the first and second test administrations. Table 2 shows the rank ordering of morphemes from the two testings which were nine months apart.

Table 2

The difficulty orderings are quite similar even though the samples were collected at different times during the year. The mean scores on each subtest improved over the nine month period but the relative ordering of subtests remained similar.

The same pattern was evident when the test was given 6 and 12 months apart. Spearman rank order correlations showed the orderings to be statistically similar for each group, as shown in Table 3.

Table 3

These results suggest that'representative slices' can be taken in cross-sectional morpheme studies; however,the size of the data base is most likely a critical factor. The validity of results of such studies are dependent upon the size of the population studied, the number of morphemes analyzed and the number of occasions that each morpheme has appeared in obligatory contexts.

Table 2

Rank Ordering of SLOPE Morpheme Subtests According to Mean Scores (n=25)

Test Administration Time 1 (September)		Test Administration Time 2 (May)	
Pres. Part.	2.04	Pres. Part.	2.75
Poss.	1.72	Subj. Pronoun	2.68
Subj. Pronoun	1.60	Prep.	2.40
Prep.	1.56	Plural-reg.	2.32
Article	1.40	Poss.	2.04
Pres. -irreg.	1.39	Pres.-irreg.	2.00
Plural-reg.	1.32	Article	1.92
Poss. Pronoun	1.20	Poss. Pronoun	1.91
Comp.	1.16	Past-reg.	1.80
Superl.	1.08	Obj. Pronoun	1.68
Obj. Pronoun	.88	Superl.	1.36
Plural irreg.	.72	Plural-irreg.	1.24
Past-reg.	.68	Comp.	1.20
Pres.-reg	.60	Pres.-reg.	1.08
Past-irreg.	.20	Past-irreg.	.44

Table 3

Spearman Rank Order Correlation Coefficients For Rank Orders Obtained 6, 9 and 12 months apart

Interval between Test Administrations	r	p
6 months	.87	$\leq$ .001
9 months	.89	$\leq$ .001
12 months	.71	$\leq$ .005

The general ordering obtained using the SLOPE Test also correlates with studies by Brown ($r=.89$, $p<.01$); Dulay and Burt ($r=.89$, $p<.01$). Thus the data support Krashen's conclusions (1977) that a reliably occurring order does seem to be present among second language learners.

A Comparison of Rank Orderings Obtained in Instrument-Elicited and and Spontaneous Speech

It has been suggested that the type of speech samples that morpheme orderings are based upon may greatly influence the order difficulty obtained (Rosansky, 1976 ; Felix, 1977). In this study a comparison is made between morpheme rank orderings which are based upon SLOPE Test elicited speech and free conversational speech to determine if a difference in ordering exists when the methods of elicitation are different.

The SLOPE Test was administered to 120 children, 6 - 14 years, all of whom had been in the U.S. one year. The same children were asked questions informally by the tester and the conversations were recorded. These recordings were listened to by a trained linguist, and ratings on morpheme usage given on a 0-3 scale based upon percent of correct usage. Ratings were given for morphemes which occurred in high enough frequency and were in common with those elicited by the SLOPE Test. The mean scores for morpheme usage in spontaneous speech and on the SLOPE subtests were calculated, and the morphemes ordered according to mean score. The mean scores for the morphemes studied based upon the two kinds of data are reported in Table 4.

A Spearman Rank order correlation showed the orders to be very

similar ($r=.92$, $p<.001$) as is evident from Table 4.

Table 4

These results suggest that the method of data elicitation does not necessarily influence the kinds of results that are obtained in a study. The SLOPE Test results suggest that instrument-elicitation can be a valid means of data collection in morpheme studies.

A Comparison of Results Using Two Methods of Analysis: Rank Ordering and Error Analysis

The previous two studies have suggested that morpheme ordering can be a valid method of analysis. However, the amount of information provided by this type of analysis is very limited, as has already been noted by numerous researchers (Andersen, 1977; Wagner-Gough and Hatch, 1976). To examine further the nature of some of these limitations, information provided by rank ordering results was compared with results obtained from an error analysis. SLOPE Test data was used to determine the rank ordering of morphenes, as well as to analyze the kinds of errors made by the students. These analyses were then used to examine differences between language learners. These two types of analyses of the same data were made to determine if both provided similar results about learner differences.

Children of different ages (6-8) 12-14 years) and different language backgrounds (Korean and Spanish) were administered the SLOPE Test. The rank ordering of morphemes was determined for each group based upon mean scores. The orders were then compared for the two age groups and the two language backgrounds. Spearman rank order correlations showed that the ordering was very similar

Table 4

Morpheme Ordering Based Upon SLOPE
Subtest Scores and
Spontaneous Speech Scores

	Spontaneous Speech Mean Scores	SLOPE Subtest Mean Scores
Subject pronoun	2.72	2.11
Plural, reg.	2.55	2.03
Preposition	2.50	1.92
Possessive Pronoun	2.40	1.02
Present Participle	2.00	2.02
Object Pronoun	1.98	.92
Article	1.26	1.88
Plural, irreg.	.94	.72
Past, reg.	.84	.62
Past, irreg.	.31	.20

for the 6-8 and 12-14 year olds ($r=.89$, $p<.01$) and for the Korean and Spanish children ($r=.84$, $p<.01$). Thus the rank ordering method showed no significant differences among learners of different ages and language backgrounds.

An error analysis was then performed on the same SLOPE Test data. The incorrect responses given on the SLOPE Test were categorized as omission, substitution or addition errors. The number of children making a specific kind of error and the number not making that error were tabulated. Only those categories were examined where errors had been made by at least 15 individuals. A Chi Square Test was used to determine if there were significant differences among learners of different ages and language backgrounds in the kind of errors they made. Table 5 reports the kinds of errors made by learners of different ages.

Table 5

A comparison of the kinds of errors made shows the only significant differences to occur were in possessive pronoun substitution errors (eg;'him hat'). The younger children made a significantly greater number of these errors than the older children.

The kinds of errors made by children of the different language backgrounds were also compared and the results are reported in Table 6.

Table 6

The results suggest that Koreans make the following errors more frequently than Spanish speakers: article omission errors

Table 5

Comparison of the Types of Errors Made by Subjects 6-8 Years and 12-14 Years

Subtest	Error Type	No. of Errors of Given Type	Number of Subjects		X^2
			6 - 8 years	12 - 14 years	
Superlative	Omission - affix	0 1 - 3	22 16	20 14	.10
	Substit. - word	0 1 - 3	22 16	12 22	2.82
Pres. 3rd irreg.	Omission - pres. morph.	0 1 - 3	8 30	7 31	.14
Preposition	Substit. - other prep.	0	9	8	.14
Past irreg.	Addition - -ing	0	19	26	3.25
	Substit. - wrong past	0 1 - 3	32 8	29 11	.28
Subject Pronoun	Substit. - wrong pron.	0 1 - 3	15 20	5 15	1.06
Possessive Pronoun	Substit. - pron.	0 1 - 3	5 32	18 21	11.19 **
	Addition - 's' to pron.	0 1 - 3	25 12	19 10	.01

** $p < .01$

Table 6

Comparison of the Types of Errors Made by Korean and Spanish Subjects

Subtest	Error Type	No. of Errors of Given Type	No. of Subjects Korean	No. of Subjects Spanish	χ^2
Article	Omission - art.	0	2	11	
		1 - 3	52	11	30.1 **
Possessive	Substit. - other form	0	51	46	
		1 - 3	0	11	9.87**
Pres. 3rd reg.	Substit. - affix -ing	0	41	47	
		1 - 3	19	12	2.44
Past irreg.	Omission - past morph	0	21	11	
		1 - 3	39	49	3.45
	Substit. - past form	0	34	44	
		1 - 3	26	16	4.43 *
Subject Pron.	Substit. - pron.	0	21	8	
		1 - 3	19	30	6.96**
	Substit. - noun	0	34	33	
		1 - 3	6	5	.31
Object Pron.	Substit. - noun	0	48	42	
		1 - 3	6	15	3.22
Possessive Pronoun	Substit. - noun	0	39	44	
		1 - 3	12	8	1.68
	Addition s to pron	0	28	41	
		1 - 3	23	11	7.81 **
Plural irreg.	Omission - plural morph	0	25	30	.69
		1 - 3	28	27	
	Substit. - reg. form -s	0	15	5	5.89 *
		1 - 3	38	52	

** $p < .01$ * $p < .05$

('this is dog'), possessive pronoun addition errors ('her's book'), past irregular substitution errors ('he throwed the ball'). The Spanish speakers made possessive substitution errors ('the hat of the man'), subject pronoun substitution errors ('him eats cake'), plural irregular substitution errors('two childs') more frequently than the Korean speakers. Thus the error analysis did identify differences among the learners which were not evident from the rank ordering method: The order remained constant but the kinds of errors varied somewhat among learners.

The simple tabulation of the number of errors made obviously does not provide information on the kind of errors made when a morpheme is produced incorrectly. In this study information on the kinds of errors produced provided information on learner differences which was not noted in the ordering analysis. This might be explained by the fact that often the same items were missed by different learners, but the kinds of incorrect responses given varied (eg; a Spanish speaker said 'the hat of the man'; while a Korean speaker said 'the man hat'; both missed this possessive item,but for different reasons).Thus the morpheme ordering appears to obscure important data, and if used effectively, should be supplemented by analyses which examine the basic forms produced by language learners.

Discussion

The results of this study suggest that morpheme rank ordering can be a valid method of analysis - even when cross-sectional data based upon instrument-elicited speech is used. Morpheme analysis has provided a means of demonstrating certain similarities among second language learners. The morpheme order studies have shown empirically something that teachers have know intuitively for years: There are certain structures which consistently seem to be more difficult than others for ESL learners.

The fact that regularities in language learning have been identified scientifically is important to teachers, as well as researchers. It seems that recently, however, some researchers have tended to over-interpret the results and over-emphasize the value of morpheme studies. For this reason the limitations of morpheme order analyses should be taken into consideration:

1) Rank ordering obscures important information: The relative ranking of structures tells us nothing about the actual structures produced and very little about the scores received by subjects.
2) The 8 - 13 morphemes which have been compared in most studies are not necessarily related and these categories themselves have been somewhat arbitrarily determined. In most studies, the linguistic forms have been categorized and separated from the more meaningful communicative functions they serve.

3) The number of grammatical structures which have been studied is extremely small and often the decision on what morphemes should be studied is based upon ease with which the morpheme can be elicited and its use analyzed, rather than its importance for communication.

The morpheme order studies, although limited in nature, have provided a basis for second language research to build upon. The fact that inadequacies exist in this method has led to many suggestions for further research, which can incorporate the knowledge gained by simple morpheme analyses, but expand greatly upon it; for example:

1) The study of the acquisition of structures other than morphemes within the context of communication.
2) The study of the 'input' as well as 'product', in terms of psychological as well as linguistic aspects.
3) The analysis of data in a way that describes the basic forms produced, while at the same time, identifies individual variability and group regularities.
4) The study of related groups of structures within context, not only isolated linguistic forms.

The value of the results of morpheme order studies for teaching is debatable. Some have suggested that the order in which structures are taught in the classroom should reflect the general difficulty order identified in many second language studies. Others have suggested that the morphemes identified in studies as being more difficult should be taught early and emphasized in classroom

exercises. However, the best applications of such research may not be to change the sequence of textbooks or curricula, but rather to provide teachers with concrete insights concerning the learning process (many of which may have previously been intuitive.) Thus the most meaningful applications may be indirect ones which influence a teacher's attitudes towards learners and outlook toward language teaching and learning in general.

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